

SPARK GAP

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IRC D-STAR PROPOSAL

Here is the full text of the IRC D-STAR Proposal, as submitted by Charlie, N9MEW, at the Indy Hamfest IRC Meeting on July 9, 2011:

The IRC is proposing to change the way that we coordinate D-STAR systems. Currently we are assigning D-STAR to normal Analog channels. We will be using a plan similar to one of the adjacent states. We have several D-STAR applications pending.

We propose to offset the D-STAR carriers either 5.0 KHz or 6.25 KHz.

At this time, we are encouraging the incumbents to change frequency, but we will not require that. The present D-STAR HOC's will be notified individually the offset that we propose.

Each analog channel will accommodate Two D-STAR systems. Theoretically two adjacent channels can be accommodated in the same location. This has not been tried yet by another state. A different state has placed them as close as 10 miles. We will not go that close.

For 2 meters, both the 15 KHz channels, and the 20 KHz channels will use plus or minus 5.0 KHz offsets from the analog channel center. The 15 KHz channels make a tight fit, but is workable. We normally require more distance to the adjacent channels for the 15 KHz channels, than we do for the 20 KHz channels.

For 70 cm and other bands that use 25 KHz channels, we will use plus or minus 6.25 KHz. Offsets. This is a good fit.

There are several benefits to use the offsets. First, we can accommodate more D-STAR systems, in that the channels can be shared, and it will minimize interference on the analog channels.

Some Coordination bodies have certain frequencies assigned only for D-STAR use. Indiana does not have any frequencies available over the complete state.

A plus or minus offset will be selected by the coordinator depending on how close the adjacent channel is. This is especially important on the 15 KHz 2 Meter channels.

Normal center channel repeater spacing will be used, for D-STAR, as for Analog channels. We may assign another D-Star system to the other offset channels, depending on adjacent channels and other factors.

A note. D-STAR and Analog cannot share the same channel at the same location. If the channel/location is used for D-STAR, then normal mileage spacing is required to place an analog system on that channel, per the chart that the IRC coordinators use.

As has been previously mentioned on this reflector, it was voted on at the meeting to change all references in that document from "D-STAR" to "Narrow-band digital", in order to accommodate other digital voice modes such as APCO-25. Otherwise, the document passed out at the meeting is as stated above.

I have added my own notes about this topic below:

Here is an EXCELLENT web page with details about D-STAR bandwidth and the results of extensive testing (with laboratory-grade equipment by real RF engineers) in the real-world of D-STAR and analog FM repeaters coexisting:

http://utahvhfs.org/dstar_channel_spacing.html

Here is what I think are very relative paragraphs from that web page:

"The relative "narrowness" of the D-Star signal is oft-touted as one of its strong points. To be sure, more of the total transmitted energy is confined near the center frequency than is the case for the analog signal. For the D-Star signal, the majority of the energy is constrained to within ± 3.6 kHz of the center frequency. In the case of the analog signal, the majority of the energy is constrained to within ± 5 kHz of the center frequency. This only tells part of the story: If one looks at the -30dB points of the two signals, one notes that the bandwidth of the D-Star and analog signals are ± 5 kHz and ± 6 kHz, respectively - and it is the energy in these sidebands that, in part, dictates adjacent-channel concerns. If one considers just the -30dB points of the transmit signals, a minimum D-Star to D-Star spacing of 10 kHz and a D-Star to Analog spacing of 11 kHz is suggested.

Perhaps even more important is the detection bandwidth of the receiver. Ideally, the D-Star's receiver's filter need only be wide enough to accommodate the primary "hump" that contains the majority of the energy - that is, out to ± 3.6 kHz, or a total bandwidth of about 7.2 kHz, but practical considerations (manufacturing tolerances in the manufacture of the filter, achievable shape factor, group delay, expected transmit or receive frequency errors, etc.) require that the filter be wider than this. As mentioned previously, the -6dB bandwidth of the IF in the IC-91AD is, in fact, 8.6kHz (± 4.3 kHz),

dropping to -30dB at 11.2kHz (+-5.6kHz). It is largely the combination of the receiver filtering plus the occupied bandwidth of the adjacent signal that dictates the minimum spacing of two D-Star signals.

Receivers designed for traditional analog FM use in amateur service are designed for a signal with a +-5 kHz modulation, so the receivers' filters are necessarily wider - typically 15 kHz wide at the -6 dB bandwidth and about 21 kHz wide at the -30 dB bandwidth. For this reason - plus the fact that the analog signal is wider - it is necessary that the spacing between an analog signal and either another analog or even a D-Star signal must be wider than that between two D-Star signals."

Bottom line quote from that article:

"Based on the above test data as well as frequency and spectral analysis, the following are recommendations of the Utah VHF Society:
D-Star to D-Star channel spacing: 12.5 kHz minimum
D-Star to Analog channel spacing: 15 kHz minimum"

In addition, here a link to an excellent technical article on the subject, as well:

http://home.roadrunner.com/~mdmiller7/images/dv/ch_sp/Dstar_Co.pdf

Stephen M. Parker, WR9A
WR9Aradio@gmail.com

RESCUE RADIO: SEPTEMBER IS NATIONAL PREPAREDNESS MONTH

September 2011 has been designated as National Preparedness Month. This is an annual event sponsored by the Ready Campaign in partnership with Citizen Corps and known as the NPM Coalition. NPM Coalition membership is open to all individuals as well as all public and private sector organizations for free. Numerous ham radio organizations are already members of this group. The objective of National Preparedness Month is to encourage Americans to take simple steps to prepare for emergencies in their homes, businesses, and communities. By joining, both individuals and organizations agree to promote emergency preparedness during September. More information is on the web at tinyurl.com/arn-prepare (NPM Coalition release)

..... Amateur Radio Newsline



FIELD DAY 2011

Field Day 2011 proved to be a quiet success. Over a half dozen MARC members worked the EOC radios for 12 hours logging hundreds of contacts. Saturday afternoon several operators set up outside the jail and made six and 40 meter contacts using the new Yeasu 857D radio and Budipole. Everyone operated 3F-Indiana in an effort to test the EOC radio equipment.

Photos by w8ish & k9dy.

Editors Note: I was on vacation this year and not able to participate locally in Field Day. I was able to get with some other HAMs in Idaho Falls, ID for a short time in the afternoon.



Someone else showing up for Field Day in Iowa Falls.

FCC Proposes Hike In Vanity Callsign Fee

A Notice of Proposed Rulemaking (NPRM) released by the Federal Communications Commission on May 3 calls for an increase in the fee for amateur radio vanity callsigns.

If the proposal is approved, vanity calls will hike to \$14.20 — a 90-cent increase from the current \$13.30. Amateur radio licenses must be renewed every 10 years.

The Communications Act of 1934 — as amended — authorizes the FCC to collect vanity callsign fees to recover the costs associated with that program. The vanity callsign regulatory fee is paid when applying for a new vanity callsign and upon renewal for a new term. Vanity callsigns issued prior to 1996 are exempt from having to pay the renewal fee. Instructions on how to comment on FCC NPRMs are available at: < <http://fcc.us/iUniqB> >. — *Multiple news sources.*



Amateur Radio Station WIURJ

If you enjoy looking at amateur radio rigs of the past I recommend this website for your consideration. There are many pictures of older model rigs and other memorabilia to see.

Please take a look, you will find it a journey back in time.

<http://www.w1ujr.net/>

2011 SCHEDULE OF EVENTS

JULY 2011

16 MARC Meeting - 8:00 AM, Franklin, IN

Located at the Johnson County Emergency Management Agency, 1111 Hospital Road, Franklin, IN. VEC Testing after the meeting (approx. 9:30 am to 11:00 am)

AUGUST 2011

20 MARC Meeting - 8:00 AM, Franklin, IN

Located at the Johnson County Emergency Management Agency, 1111 Hospital Road, Franklin, IN. VEC Testing after the meeting (approx. 9:30 am to 11:00 am)

SEPTEMBER 2011

17 MARC Meeting - 8:00 AM, Franklin, IN (ANNUAL PICNIC, location TBA)

Located at the Johnson County Emergency Management Agency, 1111 Hospital Road, Franklin, IN. VEC Testing after the meeting (approx. 9:30 am to 11:00 am)

SEPTEMBER 2011

24 GREENWOOD HS MARCHING BAND INVITATIONAL (club event)

Greenwood HS Smith Valley Rd (west of US31) evening event this year and all are needed to assist with parking cars and public safety. This can count as an ARES Exercise for 2011.

OCTOBER 2011

15 MARC Meeting - 8:00 AM, Franklin, IN

Located at the Johnson County Emergency Management Agency, 1111 Hospital Road, Franklin, IN. VEC Testing after the meeting (approx. 9:30 am to 11:00 am)

2011 Indiana Hamfests

August 6	Steuben County 4-H Fairgrounds in Angola, Indiana
August 27	Owen-Monroe Hamfest , Owen County Fairgrounds, Spencer, IN , http://www.inarri.org/hamfest.html
August 27	Ripley Co. Amateur Radio Club Hamfest , Ripley County 4-H Fairgrounds, Osgood, IN
Oct. 2	Hoosier Hills Hamfest , Lawrence County 4H Fairgrounds, 11261 US Hwy 50 West., Bedford , http://www.w9qyq.org/
Oct. 8	LCARC Hamfest , Lake County Fairgrounds, 889 S. Court Street, Crown Point, Indiana, http://www.lakenetnwi.net/member/lcarc/
Nov. 19-20	Indiana State Convention, Fort Wayne Hamfest & Computer Expo , Allen County War Memorial Coliseum, Fort Wayne, http://www.fortwaynehamfest.com



MID-STATE AMATEUR RADIO CLUB

The Mid-State Amateur Radio Club meets the **THIRD SATURDAY** of each month in the basement of the Johnson County Emergency Management Agency, 1111 Hospital Road, Franklin, Indiana 46131.

See our website, www.midstatehams.org, for maps on how to get to our meeting.

WA9RDF
Repeater
146.835/
146.235 MHz
151.4 Hz PL Tone

Club Officers:
President: Steve Carmean - K9DY
Vice President: Dave Daily – KB9LOT
Secretary: Robert Jones – KC9NJM
Treasurer: Jacki Frederick – KI6QOG
Repeater Trustee: Jay Chrismon – AA9YP

Weekly Net: Sunday evening 7:00 PM ARES/RACES members and ALL RADIO AMATEURS

The Official Newsletter of the Mid-State Amateur Radio Club

*P.O. Box 836
Franklin, Indiana
46131*

Editor: Robert LaGrange N9SIU

Please send your articles to my email n9siu@yahoo.com no later than the 3rd of the month

